

# UNDETECTED RETAINED ORBITAL WOOD FRAGMENT MIMICKING ORBITAL CELLULITIS – CASE REPORT AND LITERATURE REVIEW

Karishma Parmar; Dr. Segun Awotesu; Dr. Helen Katsarelis; Mr. Philip Ameerally; Mr. Tristan McMullan  
Northampton General Hospital – Ophthalmology Department

Wooden foreign bodies (FBs) within the orbit are difficult to diagnose both clinically and radiologically<sup>1</sup>. In acute settings, wood can be missed on standard computerized tomography (CT) due to its hypodense appearance. If left undetected, these pose a risk of infection<sup>2</sup>. Our case describes a 31-year-old man who presented with a clinical picture of orbital cellulitis post trauma, but later found to have a large retained fragment of wood.

## Case Report

Our patient presented with a 3day history of pain and blurred vision, in his right eye (RE) after running into a tree branch. On examination: Unaided visual acuities of Snellen 6/12 in RE and 6/6-3 in left eye. Ocular motility examination: slight restricted upward gaze of the RE. Periorbital swelling and erythema were noted with crepitus over the lower eyelid. He had subconjunctival haemorrhages but no evidence of a penetrating globe injury. A CT orbits revealed right periorbital gas and a small defect in the medial aspect of the posterior orbital floor (Figure 1). He was managed under the joint care of the Ophthalmology and Maxillo-facial teams, and conservative treatment was decided due to small defect. He was admitted and commenced on IV antibiotics for orbital cellulitis and discharged 3days later.

A subsequent report of the CT suggested the possibility of a FB within the right maxillary antrum extending into the posterior medial orbital floor. Our suspicion was of a penetrating wooden fragment and the patient was listed for surgical exploration. He underwent a Caudwell-Luc approach to the right maxillary antrum where a large fragment of wood (see Figure 2) was removed. The orbit was explored via a trans-conjunctival approach.



Figure 2 Photograph of wooden foreign body removed from the right maxillary antrum

Post-operatively, his visual acuity was unchanged from his pre-injury status. Orthoptic examination was normal.

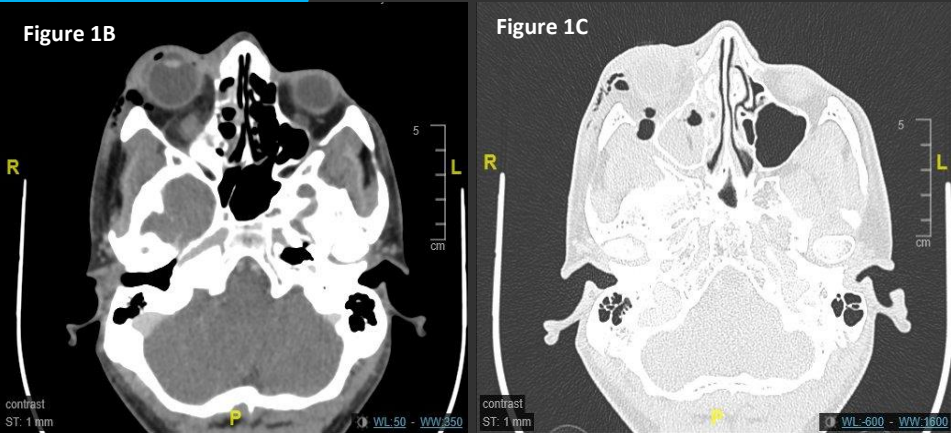
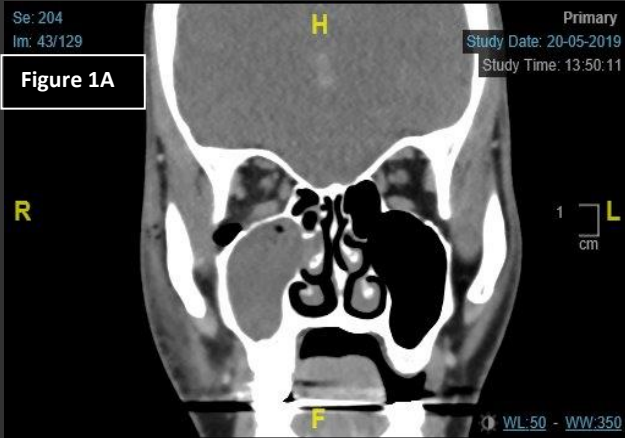


Figure 1 Contrast CT Orbits with soft tissue window setting shows right periorbital gas in A - Coronal views, and B, C – Axial views.

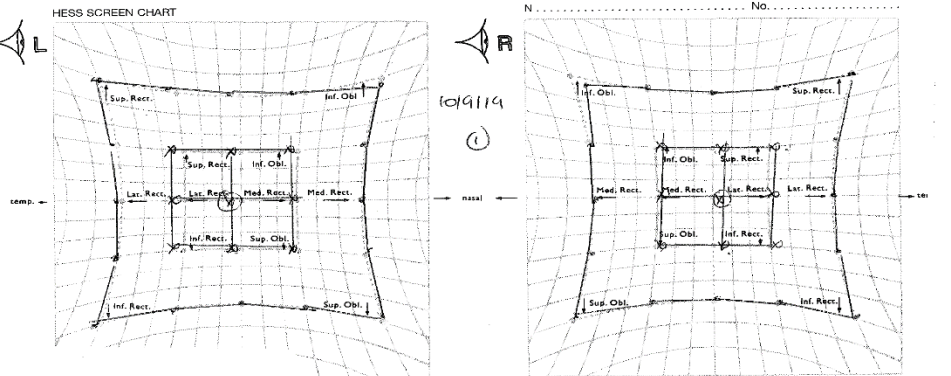


Figure 3 HESS Chart of the patient post-operatively

**Discussion:** CT is the gold standard method for detecting any suspected FB within the orbit. Our case demonstrates that organic FBs, such as wood, can easily be missed without the use of the correct CT window settings. This can lead to retained FBs with serious complications such as infection, abscess and fistulas<sup>3</sup>. When dry, wood can be hypodense on CT and misinterpreted as air. Over time, it absorbs water and therefore appears hyperdense. Hence, wood has shown to have variable attenuation on CT with Hounsfield Units (HU) from -984HU for dry, to -70 HU for wet wood<sup>1</sup>. The use of wider CT window settings optimizes the detection of wooden FBs. Some cases<sup>4,5</sup> have demonstrated that bone window (4000HU width/400HU level)<sup>3</sup> and lung window (1500HU width/-500HU level)<sup>8</sup> enhance visualisation of FBs of much lower radiographic density

## Learning points:

- Retained FB in the orbital cavity pose a high risk of infection.
- In any orbital trauma, the possibility of a retained object should be thoroughly investigated.
- If index of suspicion is high for a penetrating radiolucent object, CT should be viewed with wider window settings, such as bone or lung views.

**Conflicts of interest** The authors declare that they have no conflict of interest.

## References

- Krimmel M, Cornelius CP, Stojadinovic S, Hoffmann J, Reinert S. Wooden foreign bodies in facial injury: A radiological pitfall. *Int J Oral Maxillofac Surg*. 2001;30(5):445-447. doi:10.1054/ijom.2001.0109
- Miller CF, Brodkey JS CB. The danger of intracranial wood. *Surg Neurol*. 1977;95-103.
- Taş S, Top H. Intraorbital wooden foreign body: clinical analysis of 32 cases, a 10 year experience. *Ulus Travma Acil Cerr Derg*. 2014;20(1):51-55. doi:10.5505/tjtes.2014.93876
- Kim DH, Park ES, Seong HY, et al. A Case of Intracranial Wooden Foreign Body: Mimicking Pneumocephalus. *Korean J Neurotrauma*. 2016;12(2):144. doi:10.13004/kjnt.2016.12.2.144
- Tasneem K, Concannon ES, Abulkhir A, Ryan RS, Barry K. Radiolucent wooden foreign body masquerading as a depressed skull fracture. *BMJ Case Rep*. 2011;1:3-5. doi:10.1136/bcr.10.2011.4964